



**Pty Limited**

## **Submission to the Senate Select Committee on Climate Change**

### **The Implications for the Waste Coal Mine Gas Generation Industry in the Carbon Pollution Reduction Scheme**

**7 April 2009**

This submission addresses the consequences of the proposed Carbon Pollution Reduction Scheme and the implications for the industry generating electricity from waste coal mine gas.

#### **The Implications - What is at stake?**

The Government's intention to exclude the abatement benefits of Waste Coal Mine Gas generation projects from the CPRS will cost jobs, reduce environmental incentives and destroy the Superannuation investment of working families.

The loss of WCMG electricity generation is a market failure caused by the major policy gap in the operation of the proposed CPRS. The following table outlines the key issues.

**Table 1 – Implications of the CPRS**

Issue	Comments
Jobs	<ul style="list-style-type: none"> <li>• WCMG stations operate in regional Australia (predominantly at remote sites)</li> <li>• <b>Current employment - approximately 100 permanent staff at risk</b></li> <li>• <b>Future employment - CPRS framework puts at risk an additional 300 to 400 new construction jobs</b> which could be created in establishing future small scale electricity generation projects using WCMG (see Appendix A – current and future projects)</li> </ul>
Environmental incentives	<ul style="list-style-type: none"> <li>• Methane is a potent “greenhouse gas” with a global warming potential 21 times greater than carbon dioxide</li> <li>• <b>The 215 MW of operating WCMG power stations reduce greenhouse gas emissions by about 6.5 million tonnes CO2-e every year.</b> Furthermore, there is the potential to roughly double the abatement using waste coal mine gas to around 12 million tonnes CO2-e (generating up to 400 MW of electricity)</li> <li>• This 6.5 million tonnes of abatement is equal to about 28% of the fugitive emissions released by coal mines in Australia. This level of saving is one of the largest abatement achievements of any industry in Australia and has been achieved through the initiative of Envirogen and Energy Developments</li> </ul>

Issue	Comments
	<ul style="list-style-type: none"> <li>• If the WCMG is not used productively for power generation then it will be vented to atmosphere or flared, resulting in the loss of the energy supply and all the electricity generation benefits</li> <li>• WCMG generators supply enough power to electrify 210,000 households (or over 1.5 times the size of Canberra), and</li> <li>• The 215 MW of WCMG power stations displaces the need for coal fired power generation which <b>saves about 1.6 million tonnes CO2-e per annum.</b></li> <li>• In practical terms, the abatement benefits of the Australian Waste Coal Mine Gas Industry (on a per annum basis) is the equivalent of: <ul style="list-style-type: none"> <li>➢ Removing 1.5 million cars off Australia's roads (or 7 times the number of cars in Canberra) or</li> <li>➢ Offsetting the electricity emissions from 830,000 households.</li> </ul> </li> </ul>
Investment impact	<ul style="list-style-type: none"> <li>• Australian Industry Fund Superannuation investors such as Vision Super, AustralianSuper, Construction and Building Unions Superannuation (CBUS), HESTA, Emergency Services and State Super (ESSSuper), HOSTPLUS, VicSuper, BUSS(Q), Suncorp, ESI Super, Sunsuper and Catholic Super &amp; Retirement Fund have all supported the early investment in the WCMG sector because of its abatement and energy supply benefits. These Industry Funds comprise 6 million members</li> <li>• In the case of Envirogen, these <b>Industry Funds have lost 30% of their current investment value in Envirogen as a direct result of the proposed CPRS framework</b> This value destruction is a result of the CPRS <i>not</i> the Global Financial Crisis</li> <li>• The reduction in equity value relates exclusively to the loss of NSW Greenhouse Gas Abatement Certificate (NGAC) income which was previously received as an incentive to invest in Australian emission abatement projects</li> <li>• The Government has a \$42 billion stimulus package in place to stimulate investment. However, there are at least six current WCMG generation projects, worth in excess of \$350 million ready to go which cannot proceed under the current CPRS — to regional Australia's detriment</li> </ul>

**The Solution - Include WCMG in the Expanded RET Scheme**

The simplest and most efficient solution to sustaining (the current level of investment) and supporting future WCMG generation investment in Australia is to include WCMG in the expanded RET Scheme. This solution is supported on the following basis:

- *WCMG is a 'zero rated' fuel source:* The destruction of WCMG methane in flares (as proposed in the CPRS) achieves a lower level of abatement than using the gas for power generation. Therefore the alternative disposal of WCMG by using it for power generation creates no additional greenhouse gas emissions. In this regard, WCMG generation can be classified as

generators will remain eligible for the Government's RET scheme. WCMG has nearly all the same characteristics and benefits as waste landfill gas and therefore both these waste gases should receive the same treatment in the RET.

- *WCMG can be labelled 'regenerative' to avoid definitional issues:* Waste coal mine gas is a fossil fuel but can be classified as a "regenerative" or "waste" fuel because it will continue to be available while coal continues to be extracted from the earth. This approach will avoid any definitional issues of classifying waste coal gas as renewable.
- *WCMG will be complementary and not displace other renewable energy projects:* The expanded RET requires approximately 10,000 MW of new power generation to fully satisfy the government's 20% target by 2020. This is an enormous target that will be very difficult to achieve without WCMG. The inclusion of WCMG in the expanded RET will provide another source of certificates that contribute to the achievement of the annual targets at relatively low cost. However, the total potential for these generators is only about 400 MW which is a small fraction of the total build program in the RET and therefore will have no impact on other renewable energy projects. Importantly, the revenue from Renewable Energy Certificates will be used to operate and maintain the WCMG power stations and will *not* provide additional revenue to coal mining.
- *Alignment with International Policy/Precedents:* It is important to note that there is strong international precedent for WCMG Renewable Scheme eligibility in France, Germany and the US (Pennsylvania). For example, the German Legislation on Renewable Energy (EEG) which was ratified on 15th October 2008 by the German Parliament includes WCMG as an eligible fuel. The objective of the legislation is "to increase Germany's use of Renewable Energy to between 25% and 30% by 2020". Under the proposed CPRS - Australia is now out of step with global precedent.
- *WCMG will assist Australia in outperforming its Kyoto targets:* By including the contribution of WCMG within the proposed expanded Renewable Energy Target, the industry has the potential, with funding available, to increase its contribution to fugitive emission abatement from its present level of about 6.5 million tonnes of CO<sub>2</sub>-e per annum to over 12 million tonnes of CO<sub>2</sub>-e per annum. This would increase Australia's abatement of fugitive emissions from 8 million tonnes of CO<sub>2</sub>-e per annum (see "Tracking to the Kyoto Target 2008-2012") to 14 million tonnes of CO<sub>2</sub>-e per annum which would be a 75% increase during the Kyoto commitment period of 2008-12. It should be noted the emissions from the mining and handling of black coal account for approximately 69% of fugitive emissions.

In summary, building additional waste coal mine gas power stations would make an important contribution to Australia's economy and welfare, delivering the following key benefits:

- A major reduction in greenhouse gas emissions.
- The production of reliable base load electricity generation that is critical in the supply constrained electricity market.
- The displacement of the need to build expensive new base load generation capacity.
- The direct supply of large loads of electricity to the distribution network (most commonly to mine sites and rural communities) which simultaneously reduces network losses and associated greenhouse emissions.
- As WCMG is of such poor quality, it means that it has no other economic use other than as a waste fuel resource to supply a valuable energy product (electricity). The utilisation of what would otherwise be a waste product offers some diversification of Australia's energy supply, thereby reducing the demand and reliance on the use of other fuels such as coal or natural gas which have increasing value in the world market. In producing the 215 MW currently generated by Australia's waste coal mine gas power stations, approximately 15,000 TJ of methane is consumed. That equates to 12% of the total natural gas consumed by all residential customers.

- Support for the economies of regional areas through sustaining local jobs and economic activity.

**Envirogen seeks your support in encouraging the Government to include Waste Coal Mine Gas as an eligible fuel in the expanded Renewable Energy Target Scheme.**

## **Key Questions Answered**

### ***Why is the Waste Coal Mine Gas Industry concerned?***

Our concern is the elimination of financial incentives (in the form of NGACs) for waste coal mine gas power stations when the NSW Greenhouse Gas Abatement Scheme (GGAS) terminates and the CPRS starts in 2010. Importantly, NGACs comprise approximately 60% WCMG income.

The start of the CPRS will dramatically cut the financial returns for abatement using waste coal mine gas generation. This outcome may eventually lead to the closure of the operating waste coal mine gas generators and the shelving of new project developments using this waste fuel and the subsequent loss of potential generation capacity from a resource which would otherwise not be used.

### ***Why is there a disincentive for WCMG generation in the CPRS?***

The CPRS as proposed in the draft legislation does not reward generation initiatives for waste coal mine gas. Therefore, the coal mines will move to reduce their permit cost by flaring the waste gas. This is the least cost option from the coal mines' perspective and consequently, the coal mines will not share the savings in permit costs beyond the value of flaring. Therefore most WCMG generators will not earn sufficient revenue to remain economically viable and this situation is likely to lead to the closure of the operating WCMG generators and the shelving of new project developments using this waste resource.

### ***Won't WCMG power stations earn more for electricity in the CPRS?***

When existing supply contracts end the electricity income will increase in the CPRS but this is nearly all offset by the extra cost of permits. The net revenue is not sufficient to cover the loss of New South Wales Gas Abatement Certificates which comprise 60% of our income.

### ***What happens to the waste gas if it is not used for power generation?***

If the waste coal mine gas is not used productively for power generation then it will be vented to atmosphere or flared, resulting in the loss of the energy supply and all the electricity generation benefits. In this regard, alternative coal fired generation will be required to replace this loss of WCMG generation - along with greater emission consequences.

### ***Does the Kyoto Protocol support the utilisation of WCMG for power generation?***

Yes, the Kyoto Protocol does recognise the abatement from WCMG projects and provide financial support through the Clean Development Mechanism (CDM) and Joint Implementation (JI). Projects that meet the eligibility criteria and are accredited under CDM and JI can create Certified Emission Reductions (CERs). The CER credits can be sold to countries with binding Kyoto commitments (see Kyoto Agreement Annex 1 Countries) to assist these countries in meeting their targets. To date about eleven projects using WCMG have been registered under CDM & JI and another sixty are in the validation stage. These projects are located in China, Ukraine, Germany, Poland, Russia, Mexico and other countries. The CERs are worth about AUS\$20/tonne CO<sub>2</sub>-e which provides the additional revenue for these projects to be financially viable.

### ***Why have other countries allowed WCMG in their renewable schemes?***

Germany, France and the State of Pennsylvania have recognised the important benefits of using this waste gas which has led to the efficient and significant level of utilisation of waste coal mine gas for power generation in these countries. In fact, Germany has a highly evolved industry (based on classifying Waste Gas as a "regenerative" fuel) which, in addition to making use of a waste resource

also exports its industry expertise to the Ukraine and Russia. Therefore the same policy in Australia will be consistent with these countries and go some way towards establishing international agreement on low carbon energy and climate change policy.

***Does classifying WCMG as a renewable fuel provide a "hidden reward" for the Coal Industry?***

No. The facts are that 97% of WCMG facilities are owned by specialist abatement providers including Envirogen and Energy Developments. Further, financing, constructing and operating electricity generation facilities from waste methane is a complex and low return investment relative to mining coal. Comparative investment returns from coal (approximately 25% equity returns) compared to generating electricity from WCMG (approximately 12% equity returns) would imply that any WCMG project would be dilutive for a coal mining organisation - and would not proceed.

***How big is 6.5 million tonnes of abatement per annum?***

This 6.5 million tonnes of abatement is equal to about 28% of the fugitive emissions released by coal mines in Australia. This level of saving is one of the largest abatement achievements of any industry in Australia that is already a major contribution to cutting Australia's greenhouse emissions. This has been achieved through the initiative of three companies – Envirogen Pty Ltd, Energy Developments Ltd and BHP Billiton.

The abatement benefit of the Australian WCMG Industry is equivalent to permanently removing 1.5 million cars off Australia's roads (or 7 times the number of cars in Canberra) or offsetting the electricity emissions from 830,000 households.

***What amount of greenhouse emissions will be saved by 2020 by WCMG generation?***

The 215 MW WCMG Power Generation will reduce emissions by nearly 80 million tonnes CO<sub>2</sub>-e over the 12 year period from 2009 to 2020. This includes about 20 million tonnes CO<sub>2</sub>-e from displacing fossil fuel power emissions and about 70 million tonnes CO<sub>2</sub>-e from destroying methane emissions.

Note: If coal fired electricity is avoided 215 MW WCMG generation will save about 1.6 million tonnes CO<sub>2</sub>-e per annum. If gas fired electricity is displaced then about half this level of abatement is achieved.

***What are the benefits of generation using WCMG?***

In addition to the major reduction in greenhouse gas emissions these power stations make an important contribution to the economy and welfare in Australia delivering the following key benefits:

- The production of reliable baseload electricity generation that is critical in the supply constrained electricity market.
- The displacement of the need to build and operate expensive new baseload generation capacity which is expected to be gas or coal fired.
- The direct supply of large loads of electricity (most commonly to mine sites and rural communities) to the distribution network and thereby reducing network losses and associated greenhouse gas emissions.
- Utilisation of a waste fuel resource to create a valuable energy product (electricity). The poor quality of the mine gas means it is of no other economic use.
- Diversification of our energy supply thereby reducing the demand and reliance on the use of other fuels such as coal or natural gas which have increasing value in the world market.
- Support for the economies of regional areas through local jobs and economic activity.

***How much energy will be lost if the WCMG is not use for power generation?***

The 215 MW of operating WCMG power stations utilise approximately 15,000 TJ of methane gas per annum which is a major quantity of energy. This is roughly equal to 12% of the total natural gas consumed by all residential customers in Australia or 10% of the total natural gas used in NSW by all customers.

***Why is WCMG similar to Landfill Gas?***

Both gases are fugitive methane that is a waste sourced from sites that will continue to operate regardless of whether the methane is captured or vented to atmosphere.

The utilization of these sources of waste methane gas for power generation uses a resource that has no other economic value except in rare cases.

Both fuels are created by the decomposition of organic matter and the only difference is the timeframe the material was previously buried underground.

Underground coal mines and most landfill sites will be covered sectors in the CPRS and require permits if methane gas is vented to atmosphere.

In the CPRS and without RET eligibility the 80 MW of operating landfill gas and the 215 MW WCMG generators would all be shut down because of insufficient revenue.

***But WCMG is not a renewable fuel***

Waste coal mine gas is a fossil fuel but can be classified as a "regenerative" or "waste" fuel because it will continue to be available while ever coal continues to be extracted from the earth. This approach will avoid any definitional issues of classifying waste coal gas as renewable.

***Won't WCMG generation damage the RET?***

The expanded RET requires approximately 10,000 MW of new power generation to fully satisfy the Government's 20% target by 2020. This is an enormous target that will be very difficult to achieve without WCMG.

The inclusion of WCMG in the expanded RET will provide another source of certificates that contribute to the achievement of the annual targets at relatively low cost. However, the total potential for these generators is about 400 MW which is a small fraction of the total build program in the RET.

## Appendix A – Current and Future Employment & Investment Statistics

### Current capital investment and employment

Site	Mining company	Location	Capacity (MW)	Capital investment	Employment
Tahmoor	Xstrata	Picton, NSW	7	\$15m	4
Teralba	Xstrata	Newcastle, NSW	4	\$10m	3
Oaky Creek	Xstrata	Emerald, QLD	20	\$40m	14
Glennies Creek	Vale	Singleton, NSW	10	\$20m	8
Appin	BHP	Picton, NSW	56	\$115m	18
Tower	BHP	Picton, NSW	41	\$85m	18
German Creek	Anglo	Emerald, QLD	32	\$65m	16
WestVAMP	BHPBilliton	Picton, NSW	6	\$15m	3
Moranbah North	Anglo	Moranbah, QLD	45	\$90m	18
<b>TOTAL</b>				<b>\$455m</b>	<b>102</b>

### Future capital investment and employment

Site	Mining company	Location	Potential capacity (MW)	Capital investment	Construction Employment
Bulga	Xstrata	Singleton, NSW	100	\$200m	120 <sup>1</sup>
Mandalong	Centennial	Wyong, NSW	10	\$20m	30
Helensburgh	Metropolitan	Helensburgh, NSW	12	\$25m	30
German Creek	Anglo	Emerald, QLD	20	\$40m	50
Ellensfield	Vale	Moranbah, QLD	20	\$40m	50
Appin/WestCliff	Illawarra	Wollongong, NSW	10	\$20m	30
<b>TOTAL</b>				<b>\$345m</b>	<b>&gt;310</b>

<sup>1</sup> In terms of indirect employment based on a 1:4 basis, given the size of the Bulga Project, the expected number of additional positions is in the order of 480 people (and would include sourcing the project materials within the Hunter Region).

## **Key Statistics**

<b>Australia's Waste Coal Mine Gas Power Generation Industry</b>
Installed Capacity - 215 MW
Average power generation $\approx$ 1,600,000 MWh per annum
Total greenhouse abatement $\approx$ 6,500,000 tonnes CO <sub>2</sub> -e per annum
This level of greenhouse abatement is equivalent to avoiding electricity related emissions from 830,000 average households which is 6.5 times the number of households in Canberra and the ACT
This level of greenhouse abatement is equivalent to removing 1,440,000 average cars from the road which is 6.9 times the number of cars in Canberra and the ACT
1,600,000 MWh of annual power generation is equivalent to continuously supplying electricity to 210,000 households which is 1.6 times the number of households in Canberra and the ACT

### **Source of Data**

Household electricity consumption

Site Use Electricity Emission Factor - tonnes/MWh

CH<sub>4</sub> combustion emission factor - kg CO<sub>2</sub>-e per GJ

<b>Data for ACT</b>	<b>Number</b>	<b>Source</b>
Passenger vehicles (cars)	195,048	ABS 6523.0 - Household Income & Distribution, Australia 2005-06
Residential households	128,500	ABS 9208.0 Survey of Motor vehicle use 2007